Proposal for TMDL Support Funds

Development of Temperature TMDL for Mainstem Columbia River and lower Snake Rivers, Idaho, Oregon and Washington

I. Background

In accordance with Section 303 of the Clean Water Act, the states of Idaho, Oregon and Washington have identified portions of the main stem of the Columbia River from the International Border to the mouth at Astoria, Oregon, and the Snake River from its confluence with the Salmon River to its confluence with the Columbia River as water quality limited. Under Section 303 (d) of the Clean Water Act, states are required to estimate Total Maximum Daily Loads for pollutants. As the first step in developing a TMDL for temperature in the main stem of the Columbia River, EPA, Region 10, has completed a water quality model which simulates temperatures in the main stem Columbia River from Grand Coulee Dam to the Bonneville Dam and along the Snake River from its confluence with the Grande Ronde River to its confluence with the Columbia. This model has been documented in a report prepared, peer reviewed in 1999, and distributed to interested parties.

The mathematical model predicts average daily temperatures, specific to locations along the lengths of the rivers, but averaged across the width and depth of the rivers. Key elements of the model include the ability to expand the model geographically, an algorithm that quantifies the uncertainty of the modeled results, and a twenty-one year database of temperature and climate data. The model is based on the energy budget method and uses an efficient numerical solution technique that simplifies the characterization of model uncertainty.

As EPA uses this model to develop the mainstem TMDL for temperature (and assisting the states in the total dissolved portion of the TMDL), the following general tasks are necessary to further this effort through this work assignment:

1)Develop a data set of point and non-point source data and information to be used in the development of mainstem TMDL;

2) Evaluate the different state water quality standards that apply to the Columbia and Snake River, reach by reach, identify which are more stringent and identify technical considerations important to developing load allocations that will meet them all;

3) In the context of the TMDL and associated data requirements and evaluation display requirements, develop a recommendation for a comprehensive modeling and data management system; hardware and software;

4) Reconcile the performance of the CQUALII model used to simulate temperature in Lake Roosevelt with observed temperature;

5) Respond to comments from the formal comment period for the Draft TMDL;

6) Arrange public outreach and input meetings, hearings, mailings, etc.

1I. TASKS

1. Develop a data set of point and non-point source data and information to be used in the development of mainstem TMDL

NPDES facilities - The contractor will develop a data set of point source input into the mainstem Snake and Columbia based on a list of point discharge facilities provided by EPA Region X. EPA will provide the contractor with the criteria concerning the type and form that the data collected in order to use it EPA's model. The contractor will contact each facility individually to ascertain if the they have any temperature monitoring data which they have collected in the last five years. Any data not fitting the data collection criteria will not be used. All contact with the permitted dischargers will be documented for inclusion in the explanation of the TMDL development process. The collected data will be provided to EPA in written (report with an explanation of developed data collection protocols, data collection points, and a summary of findings) and electronic form. The data collected will be placed in a form suitable for use in EPA Region 10's water quality model.

Irrigation return flows - The contractor will develop a list (location by river mile, ditch name) of irrigation return flows that deliver water directly into the mainstem Columbia and Snake Rivers. The contractor will obtain available temperature and flow data for each source. The collected data will be provided to EPA in written (report with an explanation of developed data collection protocols, data collection points, and a summary of findings) and electronic form. The data collected will be placed in a form suitable for use in EPA Region 10's water quality model.

Stormwater data - The contractor will develop a data set of stormwater inputs into the mainstem Snake and Columbia based on a list of cities/municipalities/state and local agencies provided by EPA Region X. EPA will provide the contractor with the criteria concerning the type and form that the data collected in order to use it EPA's model. The contractor will contact each entity individually to ascertain if the they have any temperature data which has been collected in the last five years. Any data not fitting the data collection criteria will not be used. All contacts made to develop this data set will be documented for inclusion in the explanation of the TMDL development process. The collected data will be provided to EPA in written (report with an explanation of developed data collection protocols, data collection points, and a summary of findings) and electronic form. The data collected will be placed in a form suitable for use in EPA Region 10's water quality model.

Historical temperature, flow and river geometry data- The contractor will search all available literature for historical data on water temperature, flow and stream channel geometry. Special emphasis will be to ensure that EPA has knowledge of an access to all historical data for these parameters from before dams were constructed on the river and throughout the development of dams on the river.

2. Evaluate the different state water quality standards that apply to the Columbia and Snake River, reach by reach, identify which are more stringent and identify technical considerations important to developing load allocations that will meet them all;

Three states and 2 indian tribes have water quality standards on the two rivers. Some reaches have applicable standards from three of the five entities. Many reaches have standards from two of the five entities. The contractor will perform an independent assessment of which of the standards are more stringent when more than one standard apply. Further the contractor will identify other technical considerations important to devopling a singlr load allocation to a reach where more than one standard apply.

3. In the context of the TMDL and associated data requirements and evaluation display requirements, develop a recommendation for a comprehensive modeling and data management system; hardware and software;

There is a great demand for use of EPA's Columbia/Snake River model. Considerable data of different types, locations and time periods are necessary for model analyses. EPA's current hardware/software system is marginally suited to the modelling and data management tasks required. The contractor will recommend a comprehensive modeling and data management system suitable for this task.

4) Reconcile the performance of the CQUALII model used to simulate temperature in Lake Roosevelt with observed temperature;

EPA has developed a CQUALII model of temperature in Lake Roosevelt. This 2 dimensional model will provide temperature inputs to the 1 dimensional RBM 10 model used for the TMDL. The contractor will finish final model adjustments to ensure that the model can predict observed temperature below the reservoir.

5) Respond to comments from the formal comment period for the Draft TMDL;

The contractor will index, scan into electronic format, and categorize comments received during the formal comment period.

6) Arrange public outreach and input meetings, hearings, mailings, etc.

The contractor will assist EPA in its Public communication and collaboration work by setting up meetings and hearings and developing mailings.

III. Deliverables

IV. SCHEDULE

V. Funds: $60,000.00. This won't cover all of these tasks, but we are seeking funds from other

sources as well.